

a grain might arise from this circumstance alone; setting aside a number of other particulars that require minute attention, and which do not seem to have been attended to in former experiments of this kind. In fact, as Professor Schumacher remarks, though we have thus five different pounds in excellent preservation, and compared with the lost standard, with the greatest care and the best instruments, though the number of these comparisons exceeds 600, yet there still remains an uncertainty as to its real weight; and this solely on account of its specific gravity and expansion not being known. And, he adds, that it is to be hoped that no pound will in future be declared a legal standard unless these elements (the knowledge of which is indispensable even for a single comparison with a good balance) are previously determined with the greatest possible precision.

Besides the account of these numerous weighings, which are stated in detail, Professor Schumacher has given various formulæ and tables which will be found of great use and application in any future experiments of a like kind that may be undertaken.

13. "On the Application of a New Principle in the Construction of Voltaic Batteries, by means of which an equally powerful current may be sustained for any period required; with a description of a sustaining battery recently exhibited at the Royal Institution." By Frederick W. Mullins, Esq., M.P., F.S.S. Communicated by N. A. Vigors, Esq., F.R.S.

The method resorted to by the Author for obtaining a continuous voltaic current of equal intensity, is the same in principle as the one employed by Professor Daniell, and described by him in his paper recently presented to the Royal Society, and published in the *Philosophical Transactions*; namely, the interposition of a thin membrane between the two metals in the voltaic circuit, so as to allow of the separation of the different fluids applied respectively to each metal: the fluid in contact with the zinc being a mixture of diluted sulphuric and nitric acids; and that in contact with the copper being a solution of sulphate of copper. The author reserves for a future paper the details of the results he has obtained, with regard to the relations between the intensity of effect, and the extent and disposition of the metallic surfaces: but states that he has obtained powerful electric action by bringing the membrane into contact with the zinc; the latter having no acid applied to it, and the only fluid employed being the solution of sulphate of copper.

14. Anonymous Essay, entitled "*Scoperta della Causa Fisica del Moto.*" Presented to the Royal Society, with a view to obtaining one of the Royal Medals for 1836.

The Author commences by an historical review of the opinions of almost every philosopher, both ancient and modern, who has treated of the subject of motion, from Pythagoras to Le Sage: and proceeds to state his own ideas relating to the cause of motion,

founded on the hypothesis that the ultimate atoms of all matter have a pyramidal figure.

15. "An Experimental Inquiry into the Modes of Warming and Ventilating Apartments." By Andrew Ure, M.D., F.R.S.

The Author, having been consulted by the Directors of the Customs Fund of Life Assurance, on the mode of ventilating the Long Room in the Custom House, and deeming the subject one of great public interest, was induced to lay the result of his observations and experimental inquiries before the Royal Society. In this room, about two hundred persons are busily engaged in transacting the business of the Institution. All these persons are found to suffer more or less from ailments of the same general character, the leading symptoms of which are a sense of fullness and tension in the head, flushing of the face, throbbing of the temples, giddiness, and occasional confusion of ideas, depriving them of the power of discharging their duties, in which important and frequently intricate calculations are required to be gone through. These symptoms of determination of blood to the head are generally accompanied by coldness and languid circulation in the feet and legs, and by a feeble, and frequent, as well as quick and irritable pulse. On examining the air of the room by appropriate instruments, the author notices more especially three circumstances in which it differs from the external air: first, its temperature, which is maintained with great uniformity within a range of  $62^{\circ}$  to  $64^{\circ}$ ; secondly, its extreme dryness, which, on one occasion, measured by Daniell's hygrometer, was 70 per cent.: and thirdly, its negatively electrical state, as indicated by the condensing gold-leaf electrometer. In all these qualities the air respired by the inmates of the room bears a close resemblance to the pestilential blasts of wind which, having passed rapidly over the scorching deserts of Arabia and Africa, constitutes the *Simoom* of those regions, and is well known by its injurious effects on animal and vegetable life. To these noxious qualities is superadded, as in the air of all rooms heated through the medium of cast-iron pipes or stoves, an offensive smell, arising partly from the partial combustion of animal and vegetable matters always floating in the atmosphere of a town, and perhaps also from minute impregnations of carbon, sulphur, phosphorus, or even arsenic, derived from the metal itself. The Author expresses his surprise that in the recent report of the Parliamentary Committee on the subject of ventilation, no reference is made to the methods employed for that object in factories, although they afford the best models for imitation, being the results of innumerable experiments made on a magnificent scale, with all the lights of science, and all the resources of the ablest engineers. He proceeds to describe these methods; and is then led to investigate the comparative efficiency, with a view to ventilation, of a draught of air resulting from a fire and chimney, and that produced by the rotation of a fan-ventilator. He shows that a given quantity of coal employed to impart motion to the latter, by means of a steam-engine, produces a ventilating